CLAIMS

1. A liquid crystal device comprising a first cell wall and a second cell wall enclosing a layer of liquid crystal material;
electrodes for applying an electric field across at least some of the liquid crystal material;
a surface alignment structure on the inner surface of at least the first cell wall providing a desired alignment to the liquid crystal molecules, wherein the said surface alignment structure comprises a random or pseudorandom two dimensional array of features which are shaped and/or orientated to produce the desired alignment.

2. A device as claimed in claim 1, wherein the geometry and spacing of the features is such as to cause the liquid crystal material to adopt a locally planar or tilted planar alignment.

3. A device as claimed in claim 2, wherein the inner surface of the second cell wall is treated to produce a locally homeotropic alignment of the liquid crystal material, whereby the cell functions in a hybrid aligned nematic mode.

4. A device as claimed in claim 2, wherein the inner surface of the second cell wall is treated to produce a locally planar or tilted planar alignment of the liquid crystal material substantially at right angles to the alignment direction on the first cell wall, whereby the cell functions in a TN or STN mode.

5. A device as claimed in claim 1, wherein the geometry and spacing of the features is such as to

cause the liquid crystal material to adopt a locally homeotropic alignment.

6. A device as claimed in claim 1, wherein the features are shaped and/or orientated so as to produce a substantially uniform planar or tilted planar alignment of the liquid crystal director in a single azimuthal direction.

7. A device as claimed in claim 1, wherein the features are shaped and/or orientated so as to produce a substantially uniform planar or tilted planar alignment of the liquid crystal director in a plurality of azimuthal directions.

8. A device as claimed in claim 1, wherein the features comprise posts which are tilted with respect to the normal to the plane of the first cell wall.

9. A device as claimed in claim 1, further including an analyser and a polariser mounted on the cell walls.

10. A device as claimed in claim 1, wherein the features are of different height, different shape, different tilt and/or different orientation in different regions of the device.

11. A device as claimed in claim 1, wherein tilt angle and orientation of the posts are uniform throughout the device.

12. A cell wall for use in manufacturing a liquid crystal device according to claim 1, comprising a wall and an alignment surface microstructure on one surface thereof for aligning the director of a liquid crystal

material, the said microstructure comprising a random or pseudorandom two dimensional array of features which are shaped and/or orientated to produce the desired alignment.

13. A method of manufacturing a cell wall in accordance with claim 12, comprising applying a photoresist material to a surface of a wall, exposing the applied photoresist material to a suitable light source through a mask which has a random or pseudorandom two dimensional array pattern, removing unexposed photoresist, and hardening the exposed photoresist material to produce a random or pseudorandom two dimensional array of alignment features on the wall.

14. A method of manufacturing a cell wall in accordance with claim 12, comprising applying a plastics material to the surface of a wall, and embossing a random or pseudorandom two dimensional array of alignment features into the plastics material.

15. A method of manufacturing a liquid crystal device in accordance with claim 1, comprising securing a first cell wall in accordance with claim 11 to a second cell wall, at least one of the cell walls having an electrode structure thereon, so as to produce a cell having spaced apart cell walls the inner surfaces of which each carry at least one electrode structure; filling the cell with a liquid crystal material, and sealing the cell.